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10.026.052	12/21/2001	James Allam Forster	TI-32569	8700

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EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 06.03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,052

Applicant(s)

FORSTER ET AL.

Examiner

James Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 10-12, 14, 17 and 26-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-12, 14, 17 and 26-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 10-12 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Wark et al. (U.S 5,929,521).

4. Wark (Fig 6A,B, 12) discloses an apparatus for testing (Abstract) having an array of solder ball contacts (142) or connection probes of a selected size, said solder-ball contact having a contact area and a peripheral area comprising: a support substrate (506) having a working surface, a multiplicity of conductive pads (156) mounted on said working surface, a multiplicity of conductive pathways (Fig 1A; 23) extending from said pads to test circuitry, at least one conductive member comprising a stud bump formed of an aluminum (132; Column 6, Lines 56-58) formed on each of said multiplicity of conductive pads and extending away from said working surface, and said conductive member formed on said pad inherently positioned on said support substrate to make an electrical connection with said peripheral area of said solder-ball contact; wherein conductive member comprises at least four conductive members located to receive said

peripheral area of a solder-ball contact for making an electrical connection; said support substrate comprises a planar insulating material and said conductive pathways comprise conductive traces(23) formed on said planar insulating material (Column 6, Lines 23-24).

5. Although Wark does not appear to explicitly teach the process limitations of "positioning, forming the conductive member from a wire, wire bonder stud bumps or bumps deposited by wire bonding machine," the product of Wark inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Khandros (US 5,476, 211).

7. Khandros (Fig 3, 5) discloses an apparatus for testing having an array of solder ball contacts or connection probes (40) of a selection size, said solder ball contacts having a contact area and a peripheral area comprising, an inherent insulating support substrate (10) having a working surface and a back surface, a multiplicity of conductive pads (90) mounted on said working surface, a multiplicity of conductive pathways ("traces"; not labeled)) formed on the working surface leading from said pads to test circuitry (1, Col. 5-10; Abstract). At least one conductive member formed on each of said multiplicity of conductive pads and extending, at least one member comprising a wire having a first and ends bonded to said conductive pad (Fig 3, said members formed on pads positioned on said support substrate to make electrical connection with

a peripheral area of said solder ball contact to connection points of a circuit (Col. 14, Lines 45-52) placed against said apparatus; wherein said raised point of said wire is supported by a mold compound (Fig 5).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Wark as applied to claim 1 and further in combination with Umeda (JP 405166811).

11. Wark does not appear to explicitly disclose that the bump comprises stud bumps bonded on top of another stud bump, but Umeda utilizes stud bumps bonded on top of another stud bump (Fig 2).

12. It would have been obvious to one of ordinary skill in the art to form the conductive member of the prior art comprising a stud bump bonded on top of another stud bump in order to increase reliability of the contact as taught by Uneda (English Par. 007).

13. Claims 1-6, 10-12, 17 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over King et al. (US 6,208,027).

14. King (Fig 1, 2) discloses a temporary interconnect apparatus (Title) having an array of solder ball contacts or connection probes, conductive members stud bump (24, 26) of a selected size, said solder-ball contact (24) having a contact area and a peripheral area comprising: an inherent insulating support substrate (14; via "traces" formed on surface electrical contact)) having a working surface and a back surface, a multiplicity of conductive pads (30) mounted on said working surface, a multiplicity of conductive pathways (Col.3, Lines 13-15) formed on the working surface leading from said pads, an interconnect nest (Fig 2) positioned on said support substrate to receive a solder ball contact point (28) and making electrical connection with a peripheral area of said of said solder ball (28); with and formed on said pads positioned on said support substrate to make electrical connection with a peripheral area of said contact with said solder ball *contacts* (understood to be solder ball, 28); and wherein the stud bumps and projections (24, 26) are gold or aluminum (Col. 2, Lines 27-30).

15. King does not appear to explicitly disclose that the conductive members, which comprise three projections (26) forming conductive contact guides are three lengths of wire extending away from said working surface and raised off of said conductive pad

are bonded to said pads by wire bonding machine to form an interconnect nest, and said interconnect nest positioned on said support substrate to receive a solder ball contact point and making electrical connection with a peripheral area of said received solder ball for testing.

16. However Beaman (Fig 6) utilizes a wire (61) extending away from said working surface bonded to said pads, to receive a solder ball contact point ("ball") to make electrical connection with a peripheral area of said received solder ball for testing.

17. It would have been obvious to one of ordinary skill in the art to form the projecting contact guide of King as a wire in order to provide projecting contacts (Beaman Fig 6; Col. 5, Line 49) as required by King (Col. 3, Lines 40-44; Col. 2, Lines 29-33), and which enables testing of the solder balls as taught by Beaman (Abstract).

18. With respect to forming wire by wire bonding machine, see paragraph 5.

19. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over King and Beaman as applied to claim 1 and in further combination with Umeda (JP 405166811).

20. Neither King nor Beaman appear to explicitly disclose that the bump comprises stud bumps bonded on top of another stud bump, but Umeda utilizes stud bumps bonded on top of another stud bump (Fig 2).

21. See paragraph 12.

Response to Arguments

22. Applicant's arguments with respect to claims 1-6, 10-12 and 14 have been considered, but have been found unpersuasive. Likewise, claim 17 has been considered but is moot in view of the new ground(s) of rejection.

Applicant contends that the alleged invention is a wire bonder stud bump. Examiner ~~respectively~~ traverses the rejection, because applicant has failed to distinguish the present invention in contrast to the previous office action. A mere allegation by applicant that the prior art is overcome does not overcome the prima facie case set by the examiner.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

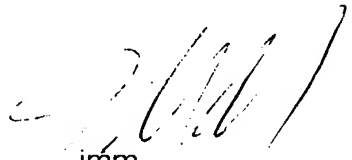
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


jmm
June 1, 2003

DAVID E. GRAY
PRIMARY E

